

**TECHNICAL REVIEW DOCUMENT**  
**for**  
**MODIFICATION TO OPERATING PERMIT 95OPCY048**

Colorado Interstate Gas Company – Kit Carson Compressor Station  
Cheyenne County  
Source ID 0170001

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Revised January 2007

**I. Purpose:**

This document establishes the decisions made regarding the requested modification to the Operating Permit for Colorado Interstate Gas Company's (CIG's) Kit Carson Compressor Station. This document provides information describing the type of modification and the changes made to the permit as requested by the source and the changes made due to the Division's analysis. This document is designed for reference during review of the proposed permit by EPA and for future reference by the Division to aid in any additional permit modifications at this facility. The conclusions made in this report are based on the information provided in the requests for modification submitted to the Division on September 27 and November 17, 2006, comments on the draft permit and technical review document received on January 4, 2007, e-mail correspondence and telephone conversations with the source. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

**II. Description of Permit Modification Request/Modification Type**

The renewal Operating Permit for the Kit Carson Compressor Station was issued on August 1, 2003. The source's request for modification is to include the appropriate provisions for an engine that was permitted as a portable emergency generator (Colorado Construction Permit 94EF430P, AIRS is 7770573) but is generally moved between either this facility or CIG's Springfield Compressor Station and may be (and likely has been) at one facility for more than 24 months. Since the unit has been and could be in the future at one location for more than 24 months it is no longer considered a portable source and cannot be permitted as such. Therefore, the source has

requested that the appropriate applicable requirements for this unit shall be included in the Title V operating permits for both this facility and the Springfield Compressor Station and will request that Colorado Construction Permit 94EP430P be cancelled upon issuance of both revised Title v permits that include the appropriate conditions for this generator.

Colorado Regulation No. 3, Part C, Section X.A identifies those modifications that can be processed under the minor permit modification procedures. Specifically, minor permit modifications “are not otherwise required by the Division to be processed as a significant modification” (Colorado Regulation No. 3, Part C, Section X.A.6). The Division requires that “any change that causes a significant increase in emissions” be processed as a significant modification (Colorado Regulation No. 3, Part C, Section I.B.36.h.(i)). The engine is not equipped with a control device and although requested emissions are based on limited hours of operation (1500 hrs/yr), this engine is permitted under a portable construction permit at those hours and potential to emit is defined as permitted emissions, which are less than the APEN significance level (NO<sub>x</sub> at 12.7 tpy, CO at 0.7 tpy). Therefore, the Division agrees that this modification qualifies as a minor modification.

### **III. Modeling**

Since the requested emissions for the engine are below the modeling threshold (40 tpy of NO<sub>x</sub> and 100 tpy of CO) and due to the nature of operations for this engine (emergency generator, operated on an intermittent basis), no modeling is required for the addition of this engine.

### **IV. Discussion of Modifications Made**

#### **Source Requested Modifications**

The Division addressed the source-s requested modifications as follows:

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In their comments on the draft permit, received on January 4, 2007, the source requested that the permit contact be changed. This change was made as requested.

#### **“New” Section II.4 – Emergency Generator**

**E007/S007 – Caterpillar, Model No. G3408TA, 4-Cycle Lean Burn, Internal Combustion Engine, Rated at 369 hp and 2.95 mmBtu/hr, Serial No. 6NBO1120. This Engine is Natural Gas Fired and Drives a 270 kw Generator.**

**1. Applicable Requirements** - This generator was initially permitted as a portable unit under Colorado Construction Permit No. 94EP430P (AIRS id 7770573), which was issued as an initial approval permit on January 5, 1995. This generator is normally moved between this facility and CIG’s Springfield Compressor Station and has in the past been at one or both facilities for more than 24 months. Since the unit has been

and could be in the future at one location for more than 24 months it is no longer considered a portable source and cannot be permitted as such. Therefore, the source has requested that the appropriate applicable requirements be included in the Title V operating permits for both this facility and Springfield Compressor Station and will request that Colorado Construction Permit 94EF430P be cancelled upon issuance of both revised Title V permits that include the appropriate conditions for this generator. No construction permit will be issued for the generator at this facility but the appropriate requirements will be included in the permit as a combined construction/operating permit. The applicable requirements are as follows:

- Opacity of emissions shall not exceed 20% (Reg 1, Section II.A.1)

Note that no condition is included for the Reg 1 30% opacity standard, which is applicable during certain operating activities. The specific activities under which the 30% opacity standard applies are: building a new fire, cleaning of fire boxes, soot blowing, startup, any process modification, or adjustment or occasional cleaning of control equipment. Based on engineering judgment the Division considers that building a new fire, cleaning of fire boxes and soot-blowing does not apply to the operation of internal combustion engines. In addition, this engine does not have a control device, so adjustment or occasional cleaning of control devices do not apply to this engine. Process modifications and startup may apply to engines, however, based on engineering judgment, the Division believes that such activities would be unlikely to occur for longer than six minutes. Therefore, the 30% opacity requirement has not been included in the operating permit.

- Natural Gas consumption shall not exceed 4.8 mmSCF/yr (as requested by APEN submitted November 17, 2006).

Note that the fuel consumption included in the Title V permit is less than the limit in permit 94EP430P, which included a fuel consumption limit based on 8760 hrs/yr of operation but emission limits based on 1500 hrs/yr of operation. The fuel consumption limit included in the Title V permit is based on 1500 hrs/yr of operation.

- Emissions of air pollutants shall not exceed the following limitations (as requested by APEN submitted November 17, 2006):

o	NO <sub>x</sub>	12.7 tons/yr
o	CO	1.2 tons/yr
o	VOC	0.3 tons/yr

Note that requested NO<sub>x</sub> emissions for the engine is the same as in permit 94EP430P but requested CO and VOC emissions are higher (due to revised AP-42 emission factors). Since requested emissions of CO and VOC are below the APEN de minimis levels, permitted emission limits for CO and VOC will not be included in the permit, although emissions of all criteria pollutants must be included on any APENS that are submitted.

Since this engine has been operating for several years as a portable source and the source submitted a self-certification indicating compliance with terms for the original construction permit (submitted on November 2, 1998), the Division will not include any specific requirement for certifying compliance with the applicable requirements for this engine. Note that since the unit is included in the Title V permit, semi-annual monitoring requirements and annual compliance certifications are required.

When this unit operated as a portable source, the Division included notification requirements for this engine whenever the engine was moved. Since this engine will only be at either this facility or Kit Carson and the appropriate provisions are being included in the Title V permits for both facilities, the Division considers that a notification requirement is not necessary. However, the permit will require that records be kept indicating where the engine is located and that the 12 month rolling totals for emissions and fuel consumption include use at either facility.

**2. Emission Factors** – Requested emissions for this engine are based on AP-42 emission factors for all pollutants except NO<sub>x</sub>, which are based on manufacturer's data. The manufacturer's NO<sub>x</sub> emission factor (19.4 g/hp-hr) was converted to units of lb/mmBtu using the engine heat rate of 7462 in the following equation:

$$\text{Lb/mmBtu} = \frac{\text{g/hp-hr} \times 10^6 \text{ Btu/mmBtu}}{\text{Heat rate (Btu/hp-hr)} \times 453.6 \text{ g/lb}}$$

The emission factors that were used to estimate emissions from this engine are summarized in the following table:

Pollutant	Emission Factor (lb/mmBtu)	Emission Factor (lb/mmSCF) <sup>1</sup>	Source
	9.99 x 10 <sup>-3</sup>	10.2	AP-42, Section 3.2, dated July 2000, Table 3.2-2, CO at < 90% load. PM and PM <sub>10</sub> based on total (filterable plus condensable).
	9.99 x 10 <sup>-3</sup>	10.2	
	5.88 x 10 <sup>-4</sup>	0.60	
	0.557	568.1	
	0.118	1230.4	
	5.73 AP-42 = 3.72	5,844.6 AP-42 = 3,794.4	Manufacturer's, converted to lb/mmBtu based on engine heat rate of 7462 Btu/hp-hr.

<sup>1</sup>emission factors in lb/mmBtu converted to lb/mmSCF based on a gas heat value of 1020 Btu/SCF per AP-42, Table 3.2-2, footnote b.

Note that since estimated emissions from PM, PM<sub>10</sub>, SO<sub>2</sub>, CO and VOC at the requested fuel consumption limits are below the APEN de minimis levels, emission limits and emission factors for those pollutants will not be included in the permit.

**3. Monitoring Requirements** - The monitoring requirements for this engine are based on guidance developed by the Division for Internal Combustion Engines as shown on the attached Grid titled "Compliance/Scenario Summary - Gas Fired IC Engines" and are included in Section II.4 of the permit. As indicated by the grid, the source will be required to monitor and record fuel consumption and calculate emissions monthly. Typically for permitted engines, the Division usually includes emission factors in units of lb/mmBtu in the permit and requires semi-annual sampling and analysis of natural gas to determine the Btu content. However, since this emergency generator is the only permitted engine at the facility and it operates infrequently (permitted levels at 1500 hrs/yr) the Division did not think it was appropriate to require gas sampling for one infrequently operated engine. The permit will include emission factors in units of lb/mmSCF.

**4. Compliance Status** – As mentioned previously, the source submitted a self-certification for this engine indicating compliance with the applicable requirements in permit 94EP430P when the unit was permitted as a portable engine. Since the unit has been and may be at either this facility or Springfield for more than 24 months and is therefore no longer considered a portable source, the source has requested that the engine be included in the Title V permits for both facilities and will cancel the portable construction permit upon issuance of both Title V permits.

### **Other Modifications**

In addition to the requested modifications made by the source, the Division used this opportunity to include changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this modification.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments on other permits, to the Kit Carson Compressor Station Operating Permit with the source's requested modifications. These changes are as follows:

#### **General**

- The Reg 3 citations were revised throughout the permit, as necessary, based on the recent revisions made to Reg 3.

#### **Section I – General Activities and Summary**

- In Condition 1.4 General Condition 3.g (Common Provisions, Affirmative Defense) was added as a State-only requirement.
- Removed Condition 6 (case-by-case MACT requirements). Although the facility is a major source for HAPS, the case-by-case MACT requirements do not apply since EPA has signed off on final rules for all of the source categories, which were not

promulgated by the deadline, the case-by-case MACT provisions in 112(j) no longer apply. No other MACT standards apply to this facility as discussed below:

NGTS Facilities MACT(40 CFR Part 63 Subpart HHH)

Since there are no glycol dehydrators, the facility is not subject to the requirements in 40 CFR Part 63 Subpart HHH.

Reciprocating Internal Combustion Engine (RICE) MACT (40 CFR Part 63 Subpart ZZZZ)

An affected source under the RICE MACT is any existing, new or reconstructed stationary RICE with a site-rating of more than 500 brake horsepower. Engines E001 through E010 are affected sources under the RICE MACT, while engines E011 and E013 are less than 500 hp and are not affected sources. The Title V permit identifies the existing engines as 2-cycle rich burn engines. The RICE MACT does not identify 2-cycle rich burn engines as a category, nor do various emission factor publications (AP-42 and GRI HAPCalc). Based on experience with other facilities, the engines identified in this permit are most likely 2-cycle lean burn engines. Existing (commenced construction prior to December 19, 2002) 2-cycle lean burn RICE do not have to meet the requirements in Subparts A or ZZZZ, including the initial notification requirements as provided for in 40 CFR Part 63 Subpart ZZZZ § 63.6590(b)(3). Therefore, the RICE MACT requirements do not apply to any of the engines at this facility.

Note that EPA has proposed revisions to the RICE MACT (published in the federal register on June 12, 2006) to include requirements for engines less than 500 hp. The two engines driving generators in the current Title V permit are also identified as 2-cycle rich burn engines and are less than 500 hp and the emergency generator that moves between Kit Carson and Springfield is a 4-cycle lean burn engine less than 500 hp. Again, as discussed above, the Division considers that engines E011 through E013 are most likely 2-cycle lean burn engines. Under the proposed revisions to the RICE MACT, existing 2-cycle and 4-cycle lean burn engines are not subject to the requirements in Subparts A or ZZZZ, including the initial notification requirements. Therefore at this time it appears that no RICE MACT requirements will apply to any of the engines at this facility.

Industrial, Commercial and Institutional Boilers and Process Heaters MACT (40 CFR Part 63 Subpart DDDDD)

There are boilers and process heaters included in the insignificant activity list in Appendix A of the permit. Although 40 CFR Part 63 Subpart DDDDD applies, existing (constructed before January 13, 2003) small gaseous fired units are not subject to any of the requirements in 40 CFR Part 63 Subparts A and DDDDD, including the initial notification requirements (§ 63.7506(c)(3)). The boilers and/or process heaters at this facility would fall under the existing small gaseous fired unit category and would therefore not be subject to any requirements.

## Organic Liquid Distribution (Non-Gasoline) MACT (40 CFR Part 63 Subpart EEEE)

As provided for in 40 CFR Part 63 Subpart EEE § 63.2334(c)(2), organic liquid distribution operations do not include activities and equipment at NGTS facilities; therefore, the organic liquid distribution MACT requirements do not apply.

- Added a column to the Table in Condition 7.1 for the startup date of the equipment.

## Sections II.1 thru 3 – Engines

- Based on EPA's response to a petition on another Title V operating permit, minor language changes were made to various permit conditions (both in the table and the text) to clarify that only natural gas is used as fuel.
- Removed the note in Conditions 1.3, 2.3 and 3.3 which states that natural gas is the only fuel used in the engines.

## Section III – Permit Shield

- The citation in the permit shield was corrected. The reference to Part C, Section XIII was changed to Part C, Section XIII.B and Reg 3, Part C, Section V.C.1.b and C.R.S. § 25-7-111(2)(I) were removed since they don't address the permit shield.
- Removed the prevention of significant deterioration requirements from the permit shield for non-applicable requirements (Section III.1). In comments received on another operating permit, EPA indicated that the Division could not grant the shield for PSD review requirements, unless the source was an existing source prior to August 7, 1977. Although this facility was an existing stationary source prior to August 7, 1977, equipment has been added to the facility after August 7, 1977 and therefore the Division cannot grant the permit shield the PSD review requirements.
- Revised the justification for the NSPS KKK requirements in Section III.1, since equipment has been added to the facility after January 20, 1984.

## Section V – General Conditions

- General Condition No. 21 (prompt deviation reporting) was revised to include the definition of prompt in 40 CFR Part 71.
- Replaced the phrase "enhanced monitoring" with "compliance assurance monitoring" in General Condition No. 22.d.

## Appendices

- Replaced Appendices B and C with the latest versions.
- EPA's mailing address was revised (Appendix D).